

Remarks and Arguments

Claim 4 was objected to for using the term "claims" instead of "claim." This grammatical mistake has been corrected herein by amendment, and reconsideration of Claim 4 under this ground for objection is respectfully requested.

The drawings were objected to for failing to show several components, namely, the movement system recited in claim 1 and the signal processing apparatus recited in claim 9. The drawings have therefore been amended to show these features. Since the movement system and the signal processing apparatus were disclosed in applicants' specification and claims, and there is nothing more disclosed by the drawing amendments than was originally present in the application, no new matter has been added. Amendments to the specification have been made to provide reference numerals for these elements, and to add text to the specification that corresponds to text of the original claims. Reconsideration of the drawings under this ground for rejection is respectfully requested.

Claim 12 was rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Claim 12 has been canceled, thereby obviating this basis for rejection.

Claims 1, 3-6, 9 and 11-12 were rejected under 35 U.S.C. §102(b) as being anticipated by Japanese Patent Application Publication No. 2000-057992 ("Ando"). Similarly, Claims 2, 7, 8, 10, 13 and 14 were rejected under 35 U.S.C. §103(a) as being obvious over Ando. In making these rejections, the examiner has stated that Ando either discloses or suggests all of the features of the rejected claims, including a beam splitter for splitting a laser beam into two beams that are used to irradiate two different sample plates. However, there appear to be some important distinctions between the present invention and the prior art of Ando.

Ando discloses a time-of-flight (TOF) mass spectrometer in which a source pulse laser has its beam split into two separate beams that irradiate, respectively, two samples S_a and S_b . The stated purpose of this is to allow the ionization of a reference

sample along with a sample under test, thereby providing a reference signal in the detected output. However, this is clearly different from the functionality of the present invention.

The present invention is directed to a TOF mass spectrometer that splits an initial laser beam in a predetermined pattern to allow the ionization of different samples located on a sample carrier at the focal points of the split beams. In order to reduce the issues surrounding the present application, the claims have been amended to focus on the embodiment in which the different samples receive laser energy sequentially from the divided beams. To this end, independent Claim 1 has been amended to recite an optical system for the pulse laser beam that is “directing the focus points sequentially in time onto a pattern of fixed focus points.” A similar modification has been made to independent method claim 11, and dependent claims covering a simultaneous illumination of different samples have been either canceled or amended accordingly.

The claims of the present application that were originally directed to the embodiment of sequentially illuminating the different samples were addressed by the examiner’s rejection for obviousness. In making that rejection, the examiner has stated that “using the moving deflection system for deflecting the laser beam is considered to be an obvious variation in design, since the moving deflection system for deflecting the laser beam is well known in the art and in the mass spectrometer apparatus for scanning the laser beam on the sample...” However, there is no citation of prior art to support this premise, and the applicants are unaware of any known arrangement that is similar to the claimed invention.

The Ando disclosure is specifically directed to the simultaneous illumination of a reference sample and a sample under investigation. Thus, Ando is not suggestive of a system in which multiple samples under test are illuminated sequentially, as is recited in the applicants’ claims. Indeed, Ando specifically teaches away from such an arrangement, stating that:


in order to analyze a strange sample with high precision, the laser beam irradiated by the sample, especially a pulse laser must mix a strange sample and a reference sample, must put them on the same planchet of a sample base, *and must be simultaneously heated and ionized by one laser beam irradiation.* (Ando translation, paragraph 4).

Clearly, with simultaneous illumination of the samples being mandatory in the prior art of Ando, there can be no suggestion of sequential illumination as in applicant's invention.

As amended, Claim 1 and Claim 11 are clearly limited to an optical system "directing the focus points sequentially in time onto a pattern of fixed focus points." As stated above, there is no suggestion of any such arrangement and, in fact, Ando teaches away from this configuration. Claims 6-8 and 12 have been canceled. Claims 2-5, 9 and 10 each depend ultimately from Claim 1, and Claims 13 and 14 depend from Claim 11, so these claims are therefore equally unsuggested by the cited prior art. Reconsideration of Claims 1-5, 9-11, 13 and 14 under the stated grounds for rejection is respectfully requested.

In light of the foregoing amendments and remarks, it is respectfully requested that all the claims be allowed such that the application may be passed to issue. If it is believed that a telephone interview will help expedite prosecution of the application, the examiner is invited to call the undersigned. The Commissioner is hereby authorized to charge any fees due for the filing of this paper to applicants' attorneys' Deposit Account No. 02-3038.

Respectfully submitted,


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Date: October 8, 2003